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The validity and reliability of the Reasons For Exercise Scale.

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THE VALIDITY AND RELIABILITY OF THE REASONS FOR EXERCISE SCALE

A Thesis Presented

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TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

Figure

Page

CHAPTER I

INTRODUCTION

The dramatic increase in eating disorders over the past three decades has given rise to studies examining factors that contribute to their development. Researchers examining the role of exercise in the development and maintenance of eating disorders have found that, although exercise is a healthy activity when done in moderation, it can also be a pathological purging behavior linked to eating disordered symptomatology. These two types of exercise have been correlated with different reasons for exercise. The existing scales that examine exercise motivation were developed to assess exercise motivation on a number of different subscales relevant to general reasons for exercise. However, no instruments have been designed to examine global eating disordered and non-eating disordered reasons for exercise. The purpose of this project is to assess the validity and reliability of the Reasons For Exercise Scale (RFES), a scale that is being developed to examine eating disordered and non-eating disordered reasons for exercise.

In this thesis, I will review the relevant literature on (1) the prevalence of eating disorders, (2) the relationship between eating disorders and exercise, (3) exercise motivation as it relates to eating disorders, and (4) the Reasons For Exercise Scale. After reviewing the literature, I will describe a study assessing the validity and reliability of the Reasons for Exercise Scale.

The Prevalence of Eating Disorders

The two most common types of eating diso rders are anorexia nervosa and bulimia nervosa. Anorexia nervosa is characterized by a refusal to maintain a minimally normal body weight, an intense fear of gaining weight, amenorrhea (the absence of at least three consecutive menstrual cycles), and a significant disturbance in the perception of body size or shape. Weight loss is usually maintained through restricted food intake, although additional methods of weight loss such as purging and excessive exercise are common. Bulimia nervosa is characterized by recurrent episodes of binge eating that are followed by inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting, misuse of laxatives, fasting, or excessive exercise (DSM-IV, APA, 1994).

Current rates of anorexia meeting DSM-IV criteria are reported at under 1% of the general population (Sutker & Adams, 1994). Current rates of bulimia meeting DSM-IV criteria vary widely due to differences in methodology. Estimates have been found as low as 1.8% in a study of female adolescents (Kaltiala-Heino, Rissanen, Rimpelae, & Rantanen, 1999) to as high as 18.6% and 12.5% in college populations (Hart & Ollendick, 1985; Pope, Hudson, Yurgelun-Todd, & Hudson, 1984). In addition, it is reported that eating disorders are more commonly found in persons from families of upper socioeconomic status, although there has been an increasing rate found in lower socioeconomic classes (Edwards-Hewitt & Gray, 1993).

There is a gender difference in the prevalence of eating disorders in that eating disorders are much more common in women than in men. The DSM-IV reports the prevalence of Bulimia Nervosa meeting full criteria at 1% - 3% among adolescent and early adulthood females, yet the rate is one-tenth of that in males the same age. One study found prevalence rates of bulimia at 1.3% for females, but 0.1% in males (Schotte & Stunkard, 1987).

The incidence of eating disorders has dramatically increased over the past several decades. Lucas, Beard, O'Fallon, and Kurland (1991) conducted a review of the incidence of anorexia nervosa in Minnesota from 1935 to 1984. They reported that the incidence of anorexia nervosa in the general population quadrupled from 7.0 per 100,000 cases in 1950 to 26.3 in 1984. The prevalence rate for females was 269.9 per 100,000. More conservative estimates were reported by Jones, Fox, Babigian, and Hutton (1980) who reported that the incidence of anorexia cases doubled over a ten-year period, from estimates of 0.35 per 100,000 in 1960-69 to 0.64 per 100,000 during 1970-79. A prevalence study in Switzerland showed a four-fold increase during the period from 1956 to 1975 in the number of people receiving treatment for anorexia (Willi & Grossman, 1983).

Relationship Between Eating Disorders and Exercise

Researchers have studied various factors that contribute to the increase in eating disorders and have been particularly interested in the role of exercise in the maintenance of eating disorders. The benefits of a regular exercise routine have long been espoused by the medical community and supported by society.

Exercise has long been recommended for the prevention and treatment of physical disorders, such as coronary heart disease, hypertension, and obesity, and psychological disorders such as depression and anxiety (e.g., Berger, 1984; Orwin, 1973; Veale, LeFevre, Pantelis, de Souza, & Mann, 1992). Although exercise is commonly linked to healthy outcomes, exercise is also linked to eating disordered pathology. Research suggests that exercise plays a role in the development and maintenance of eating disorders. For example, Davis, Kennedy, Ravelski, and Dionne (1994) conducted a study of 45 female patients admitted to an Eating Disorders Unit of a Toronto hospital in order to assess the role of exercise in their eating disorder pathology. They that found 78% of the women engaged in excessive exercise, 60% were competitive athletes prior to the onset of the eating disorder, and 60% reported that their exercise behaviors pre-dated dieting behaviors.

Exercise has been studied in relation to eating disorders in a number of ways. As mentioned before, the diagnostic criteria for anorexia and bulimia include excessive exercise as a possible symptom of the disorders (DSM-IV, APA, 1994). For instance, anorexics experience an intense fear of weight gain and may engage in a restrictive diet and excessive exercise in order to lose weight. Bulimics engage in binge eating and employ weight-control strategies to avoid weight gain. "Purging" bulimics induce vomiting, use laxatives, or diuretics, whereas "non-purging" bulimics fast, diet, or engage in excessive exercise to avoid gaining weight.

"Obligatory exercise", interchangeable with the terms "excessive exercise" or "exercise dependence", has been studied in relation to eating disorders (Brehm & Steffen, 1998; Ogden, Veale & Summers, 1997; Steffen & Brehm, 1999). Obligatory exercisers are individuals for whom exercise is the central focus of their lives, regardless of its physical or social consequences. Obligatory exercisers maintain a rigid schedule of intense exercise, have feelings of guilt and anxiety when the exercise schedule cannot be followed, are preoccupied with food and a lean body mass, and push themselves to exercise even when tired, ill, or injured (Yates, 1991). One study examining the link between obligatory exercise and eating disorders found that obligatory exercisers displayed more eating disordered attitudes than non-obligatory exercisers (Brehm & Steffen, 1998). The nature of the link between eating disorders and obligatory exercise is ambiguous. Some researchers suggest that they are phenomenologically analogous disorders with different behavioral manifestations (Yates, 1991), while others argue that obligatory exercise predisposes individuals to developing eating disorders (Davis, 1990).

Given the rise of female sports participation in the past twenty years, researchers have also examined the relationship between eating disorders and exercise, as it relates to female athletes (Weiss & Barber, 1995). To date, a conclusive relationship between women athletes and eating disorders has not been determined. Furnham, Titman, and Sleeman (1994) found that females who participate in recreational exercise possess greater positive perceptions of their own bodies than females who do not participate in recreational exercise.

However, other researchers (Davis & Cowles, 1989; Klock & DeSouza, 1994; Pasman & Thompson, 1988; Stoujesdyk & Jevne, 1993;Taub & Blinde, 1994) have reported contrasting findings in that female athletes have been found to be at an increased risk for developing eating disorders.

Closer examination of the relationship between female athletes and eating disorders reveals that the relationship may depend on the demands of the sport. Women athletes in weight-dependent sports, such as gymnastics, diving, figure skating and long-distance running, have been identified as being at higher risk for developing an eating disorder than those in non-weight dependent sports. In such weight-dependent sports, physical aesthetics and thinness are integral aspects of success in the competition. Stoutjesdyk & Jevne, (1993) studied male and female athletes competing in gymnastics, diving, and lightweight crew and found that 10% of the female athletes scored in the anorexic range in the Eating Attitudes Test, and 40% scored just below clinical threshold for anorexia. Sungot-Borgen (1994) studied 603 Norwegian athletes competing in weight-dependent sports and reported that 103 were considered "at risk" according to the Eating Disorders Inventory. Detailed interviews indicated that 1.3% met criteria for anorexia nervosa and 8% met criteria for bulimia nervosa. In a comprehensive survey of eating disorders in athletes, Johnson, Powers, and Dick (1999) studied 1,445 student athletes from Division 1 schools. The results yielded more conservative estimates of disordered eating among athletes. Only 1.1% of the female athletes met criteria for bulimia nervosa, and none met the criteria for anorexia nervosa. However, 34.75% were considered at risk for

anorexia, and 38% were considered at risk for bulimia according to the Eating Disorders Inventory. In addition to higher rates of eating disorders, weight-dependent athletes also may suffer from lower self-esteem and body image disturbances, despite the fact that their weight is significantly lower than non-weight dependent athletes (Pasman & Thompson, 1988).

Exercise Motivation

Given the paradoxical nature of exercise as both a non-pathological activity and a pathological activity, researchers have begun to examine factors that differentiate healthy from unhealthy exercise. Research examining the reasons why individuals engage in exercise has shed a great deal of light on the different reasons that lead individuals to engage in healthy and unhealthy exercise.

Siberstein, Stiegal-Moore, Timko, and Rodin (1988) developed the Reasons for Exercise Inventory (REI), a 24 item self-report scale that examines individual motivations for exercise in seven domains: weight control, fitness, health, tone, attractiveness, mood, and enjoyment. The REI was administered to 82 male and female undergraduates to study gender differences in exercise motivation. No gender differences were found in motivation with the exception of weight control, in that significantly more females endorsed weight control as an exercise motivation than males. In addition, there was a significant relationship between weight-control motivations, and attitudes and behaviors associated with disordered eating (Siberstein, Stiegal-Moore, Timko, & Rodin,1988).

MacDonald and Thompson (1990) further examined the relationship between exercise motivation, gender, and eating disordered attitudes. 191 male and female undergraduates were given the REI and the Eating Disorders Inventory (Garner, Olmstead, & Polivy, 1983). Similar to the results of Siberstein and her colleagues, women endorse significantly more weight-control motivations than men; however, women also endorse more tone-related motivations than men as well. Exercising for weight-control, tone, and to a lesser degree, attractiveness reasons, was positively correlated with eating disturbances and body image dissatisfaction in both genders. However, exercising for health and fitness reasons were associated with less eating disturbances and greater self-esteem.

Cash, Novy, and Grant (1994) analyzed the factor structure of the REI and, instead of the original seven factors, reported a four-factor structure: fitness/health management, appearance/weight management, stress/mood management, and socializing. They administered the REI to 137 females and found all subscales equally endorsed, with the exception of lower endorsement of the socializing subscale. However, among the four factors, only the appearance/weight management subscale was significantly related to greater body-image discontent and distress. In a similar study also using the four-factor structure of the REI, Smith, Handley, and Eldrige (1998) surveyed 178 male and female college students on body-image distress. They found significantly more women than men endorsed the appearance/weight management subscale, and reported that this was significantly related to greater situational body distress.

The Exercise Motivations Inventory (Markland & Hardy, 1993) is another scale that examines exercise motivations. The EMI is a 44-item self-report questionnaire with twelve factors: stress management, weight management, recreation, social recognition, enjoyment, appearance, personal development, affiliation, ill-health avoidance, competition, fitness, and health pressures. Although little work has been done with the EMI, preliminary analysis has revealed that, similar to female responses on the REI, females endorse significantly more weight management and appearance-related motivations than other motivations on the EMI (Markland & Hardy, 1993)

The data collected using the REI and the EMI suggest that specific exercise motivations are related to eating disordered pathology, and other exercise motivations are not related to eating disordered pathology. Appearance and weight-related motivations are consistently related to eating disordered pathology. However, the remaining exercise motivations (i.e., fitness, health, enjoyment, mood, and socializing) are not related to eating disordered pathology.

The authors of these measures have conceptualized motivations for exercise according to various subscales; however, the scales do not reflect global, concise measures of eating disordered or non-eating disordered-related exercise motivations. Existing measures fail to assess exercise motivations as they would be meaningfully related to eating disorder symptomatology.

Reasons For Exercise Scale

The Reasons For Exercise Scale (RFES) is a questionnaire developed by Patricia DiBartolo and Carey Shaffer to measure different motivations for

exercise. It was their hope to develop a questionnaire that examines reasons for exercise as they may be related to eating disordered pathology. Unlike other existing measures, the RFES was designed to measure reasons for exercise that are related to healthy eating habits and body image as reasons for exercise related to unhealthy eating habits and body image. In addition, the RFES is meant to be a global, brief, and concise rating of people's reasons for exercise as they may be relevant to healthy and unhealthy eating and body image.

The RFES is a 20-item self-report questionnaire in which participants indicate their degree of agreement with exercise-related statements on a 7-point Likert scale (1 = do not agree, 7 = strongly agree). The scale includes 10 Positive Reasons for Exercise (PRE) as conceptualized by those reasons that promote fitness, health, mood management, socializing, and enjoyment (e.g., "I want to be strong and healthy so I exercise." "I really have fun when I am exercising." "I can meet other people when I exercise."). Negative Reasons for Exercise (NRE) are conceptualized as those reasons related to weight management or appearance (e.g., "I will look better in a bathing suit if I exercise." "I exercise because I want to be thin." "I am worried I will gain weight if I don't exercise.").

Purpose of the Study

The RFES is currently in its early stages of development. Originally designed for use in a student's research thesis, little work has been done regarding the use of the RFES as a valid and reliable measure of reasons for

exercise. Since its original administration, additional data have been collected for an assessment of the validity and the reliability of the RFES.

In this study, I assess the validity and reliability of the RFES. Validity was assessed by examining concurrent and construct validity. Concurrent validity refers to the extent to which a scale is correlated with related measures. The Eating Attitudes Test (EAT), Body Size Drawing (BSD), and the Body Dissatisfaction subscale (BD) of the Eating Disorders Inventory, are all commonly used measures reflecting eating disordered attitudes, and were administered with the RFES. Construct validity refers to the extent that an instrument measures a theoretical construct, and can be analyzed by assessing the factor structure of an instrument. The RFES was developed to measure two factors: eating disordered reasons for exercise, and non-eating disordered reasons for exercise. A factor analysis indicated whether a two-factor structure exists.

Reliability was assessed by examining internal consistency and test-retest reliability. Internal consistency refers to the consistency of the instrument's items to each other. The item consistency will be analyzed for the entire scale as well as for each factor. Test-retest reliability refers to the performance of a test over time and provides an estimate of the test's stability. This was measured by the examining the correlation between the first and the second administrations of the RFES.

Hypotheses

1) It is hypothesized that scores on the RFES will load onto two factors, one clustering around positive reasons for exercise (PRE) and one clustering around negative reasons for exercise (NRE).

2) It is hypothesized that NRE scores on the RFES will be positively correlated with scores on the EAT, reflecting greater endorsement of eating disordered attitudes. PRE on the RFES will be negatively correlated with scores on the EAT, reflecting lesser endorsement of eating disordered attitudes.

3) It is hypothesized that NRE scores on the RFES will be positively correlated with larger discrepancies on the BSD, reflecting greater body dissatisfaction. PRE scores on the RFES will be negatively correlated with the BSD, reflecting lesser body dissatisfaction.

4) It is hypothesized that NRE scores on the RFES will be positively correlated with scores on the BD, reflecting greater eating disordered pathology. PRE on the RFES will be negatively correlated with scores on the BD, reflecting lesser eating disordered pathology.

5) It is hypothesized that the RFES will show a strong correlation between its first and second administrations, reflecting high test stability.

6) It is hypothesized that the RFES will show adequate intercorrelations for the entire scale and individual factors, reflecting strong internal consistency.

CHAPTER II

METHOD

Participants

Data were collected from two samples: a high school sample and a college sample. The high school sample consists of 151 female students recruited from a high school summer science program sponsored by Smith College during the summers of 1996, 1997, and 1999. The college sample consists of 220 female college students recruited from Smith College psychology classes in 1996. Participation was voluntary and students were compensated with either course extra credit or participation in a fifty dollar lottery.

Materials

Reasons for Exercise Scale (RFES). The RFES is a 20-item self-report questionnaire in which participants indicate their degree of agreement with exercise-related statements on a 7-point Likert scale (1 = do not agree, 7 = strongly agree). The scale was designed to measure 10 healthy reasons for exercise as conceptualized by those reasons that enhance the individual's overall emotional or physical well-being (e.g., "I want to be strong and healthy so I exercise". "I really have fun when I am exercising."). Unhealthy reasons for exercise are conceptualized as those reasons related to weight or appearance motivations (e.g., "I will look better in a bathing suit if I exercise." "I exercise because I want to be thin.").

Eating Attitudes Test (EAT-26). The Eating Attitudes Test is a 26-item self-report scale designed to measure anorexia-related attitudes and beliefs

about food (Garner, Olmstead, Bohr, & Garfinkel, 1982). Questions are rated on a 6-point Likert scale (1 = never, 6 = always) and has a Cronbach's alpha coefficient of .79 for anorexic subjects and .94 for combined anorexic and nonclinical control subjects. The test-retest reliability at two to three week intervals is r = 0.84.

Body Size Drawings (BSD). The Body Size Drawings (Fallon & Rozin, 1985) is a measure of body dissatisfaction. The BSD consists of a continuum of 12 female silhouettes ranging in body shape from anorexic to obese. Each participant is asked to indicate the figure that best represents her own body size, as well as the figure that best represents her ideal or desired body size. This measure is scored by the finding the total number of size differences between the participant's actual body size and the indicated ideal or desired body size.

Eating Disorders Inventory (EDI) – Body Dissatisfaction (BD) subscale. The Eating Disorders Inventory (Garner, Olmstead, & Polivy, 1983) is a widely used 64-item self-report questionnaire consisting of eight separate subscales: drive for thinness, body dissatisfaction, bulimia, ineffectiveness, perfectionism, interpersonal distrust, interoceptive awareness, and maturity fears. The Body Dissatisfaction subscale (BD) is a 9-item scale in which subjects indicate their degree of agreement on a six-point scale (1 = always to 6 = never) to statements concerning satisfaction with body parts (e.g., I think that my stomach is too big; I feel satisfied with the shape of my body.) The internal consistency of the BD subscale is extremely high for both anorexic and control subjects ($\underline{r}$ = .90 and $\underline{r}$ = .91, respectively). Test-retest scores at a one year interval yielded strong

correlations (r = .70). Concurrent validity of the BD subscale with the Body Shape Questionnaire is also relatively high (r = 78).

The BD subscale was administered to only the college student sample, therefore, analysis using the BD can only be conducted with the college student data.

Demographic Questionnaire. A brief demographic questionnaire was included in the packets. The questions collected information about the age, current education level, race, height, and weight of the participant.

Procedure

High School Student Sample. Parental consent forms were mailed to the parents of all high school students attending the summer science program at Smith College. High school students whose parents had given consent were eligible to participate in the study. Those students who volunteered to participate were given assent forms to read and sign. The assent forms contained information about the confidentiality of each participant's responses as well as her choice to terminate their participation without penalty at any time. Participants were then given a questionnaire packet to complete in their dorm rooms. The high school questionnaire packet contained the RFES, BSD, EAT, and a brief demographic survey. Participants were asked to return the completed packets to a collection drop-off the following day. Students were compensated for their participation by having their name entered into a lottery for a fifty-dollar prize.

College Student Sample. College students were recruited from Smith College psychology classes in return for course credit. Approximately 10 to 40 participants were present in each testing session. After the project was explained, consent forms were given to all the participants to read and sign. The consent form contained information about the confidentiality of each participant's responses as well as her choice to terminate their participation without penalty at any time. Questionnaire packets were then given out to all the participants. The college sample packet contained the RFES, BSD, EAT, EDI, and a brief demographic survey. Participants took approximately 30 minutes to complete the questionnaires. A debriefing statement was attached to the end of the questionnaire in which participants were given the rationale for the study. A small reference list was also provided for the participants' interest.

Test-Retest. Approximately four weeks after completing the college sample questionnaire packet, the RFES was mailed to the first 112 participants from the college sample. Participants were asked to fill out the questionnaire immediately and return it via mail to the experimenter. A consent form was attached to the RFES that informed participants they were under no obligation to complete the retest questionnaire. The returned consent form attached to the RFES was necessary in order for a participant's data to be included in the final test-retest analysis. Ninety-eight questionnaires were returned, yielding an 88% return rate.

CHAPTER III

RESULTS

The purpose of this study was to assess the validity and reliability of the Reasons for Exercise Scale (RFES), a 20-item self-report scale designed to measure reasons for exercise. Study findings are presented in five sections: (a) sample statistics, (b) exploratory factor analysis, (c) concurrent validity, (d) test-retest reliability, and (e) internal consistency.

Sample Statistics

The total sample consisted of 371 female participants ranging in age from 13 to 26 (M = 17.68, SD = 2.16; See Figure 1). 150 participants identified themselves as high school students, with a mean grade level of 10.81 years. 220 participants identified themselves as college students, with a mean grade level of 13.96 years. According to the self-report responses to a racial identification question, 240 participants (64.2%) self-reported as White, 35 participants (9.4%) as Black, 52 participants (13.9%) as Asian, 16 participants (4.3%) as Hispanic, and 22 participants (5.9%) did not racially identify themselves (See Figure 2).

A t-test was performed in order to determine whether it would be appropriate to conduct separate analysis for the high school and college samples, or to collapse together the two samples. The t-test revealed no significant differences between the high school and college sample on all measures except for body mass index. As expected, the college sample had a significantly greater BMI than the high school sample (t (339) = 2.947, p < .01),

suggesting that separate analysis for the high school and college samples needed to be conducted when using the BMI in correlational analysis. However, no differences were found between the high school and college samples for the RFES or the EAT, BSD, or the BD, suggesting that it would be appropriate to analyze the high school and college samples together for all other analysis.

A one-way ANOVA on the total RFES scores was performed to determine whether any significant differences existed between the different racial groups on the RFES total score and the related measures of eating disordered attitudes. The one-way ANOVA revealed no significant differences between the races, suggesting that it would be appropriate to collapse across racial groups for data analysis as well.

Exploratory Factor Analysis

Initial Factor Analysis and Item Elimination. The 20-item questionnaire was analyzed using a principal components factor analysis with Varimax rotation on SPSS for Windows. The initial analysis produced a solution consisting of three factors with Eigenvalues greater than 1.0 (the default extraction criteria used by SPSS for Windows) (F1, Eigenvalue = 5.757, Variance = 28.784; F2, Eigenvalue = 4.249, Variance = 21.245; F3, Eigenvalue = 1.142, Variance = 5.708). The necessary statistical criteria for item retention was a factor loading of .4 or greater on one factor. In addition, the item could not simultaneously load on other factors, ensuring each item would be salient to only one factor. Items 18 and 19 had factor loadings below .4 on all factors and therefore were excluded.

Analysis of Remaining Items. The remaining 18 items were then factor analyzed again to evaluate the final factor loadings and the variance accounted for by the different factors. A principal components factor analysis conducted with Varimax rotation yielded three factors with Eigenvalues greater than 1.0 (F1, Eigenvalue = 5.522, Variance = 30.676; F2, Eigenvalue = 4.201, Variance = 23.339; F3, Eigenvalue = 1.018, Variance = 5.657). However, the Scree plot suggested that a two-factor solution would be more appropriate. Furthermore, the two-factor solution provided more meaningful factors, therefore a two-factor solution was deemed a better model for the RFES than a three-factor solution (Figure 3 presents the Scree plot for the 18-item RFES scale.)

Subscales. The resultant factor structure was comprised of two factors that were labeled *Health and Enjoyment* and *Weight and Appearance* (See Table 1). The items belonging to the Health and Enjoyment factor reflect reasons for exercise pertaining to fitness, health, mood management, socializing, and enjoyment; whereas the items belonging to the Weight and Appearance factor reflect reasons for exercise that are related to concern for appearance or weight. The nine items that are included in Weight and Appearance subscale all had factor loadings greater than .674, and an overall mean factor loading of .7703. The nine items that are included in the Health and Enjoyment subscale all had factor loadings greater than .405, and an overall mean factor loading of .6695. No items loaded above .400 on both factors, and there was a minimum of a .300 difference between the two factor loadings, indicating a goodness of fit between the questionnaire item and its factor. Correlations between the two subscales

were computed. The correlation was not significant (r (367) = .067, p = .202) suggesting that the two factors are orthagonal. Hypothesis 1 was confirmed in that the factor analysis yielded an anticipated two-factor structure, accounting for 54% of the scale's variance.

Based on this analysis, total scores were computed for the RFES scale as well as for the two subscales. RFES total scores were computed by totaling the response scores for all the items on the questionnaire. Subscale scores were computed by totaling the response scores for the nine items in each subscale. Although analysis was conducted for the entire scale as well as for individual factors, using the RFES total score alone or averaging across subscales is not recommended.

A t-test was conducted to determine whether any significant differences existed between the high school and the college samples on the two subscales. The t-test revealed a significant difference was found on the RFES Weight and Appearance subscale, such that the college sample had significantly higher scores than the high school sample (t (367) = 2.710, $p < .05$). This suggested that separate analysis should be conducted for high school and college samples when correlating the Weight and Appearance subscale with other related mesaures.

A one-way ANOVA was conducted on the RFES subscales to determine whether any significant differences existed between the different racial groups in the sample. A significant main effect was found for race on the Weight and Appearance subscale (F (4,359) = 2.542, $p < .05$). A Tukey test was performed

on the Weight and Appearance subscales comparing the racial groups. The Tukey test revealed that Hispanics scored significantly lower on the Weight and Appearance subscale than Whites and those who did not racially identify themselves. However because the Hispanic sample size is small (N = 16), no substantial inferences can be made about the differences between racial groups on the Weight and Appearance subscale. Therefore, it was deemed appropriate to collapse the data across ethnic groups.

Concurrent Validity

To determine the concurrent validity of the RFES, Pearson product-moment correlations were performed on the RFES and three measures of eating disordered attitudes: Eating Attitudes Test, Body Size Drawings, and Body Dissatisfaction subscale. Table 2 presents the mean, standard deviation, and minimum and maximum values for each of these measures. Pearson product-moment correlations among the RFES and the three disordered eating measures are presented in Table 3.

Hypothesis 2 was supported in that the RFES and its subscales correlated with the Eating Attitudes Test in expected directions. A moderate positive correlation was found between the RFES total score and the EAT (r (367) = .365, $p < .001$; 95% confidence interval .274 to .450). A weak negative correlation was found between the Health and Enjoyment subscale and the Eating Attitudes Test (r (367) = -.136, $p < .01$; 95% confidence interval -.034 to -.235). Separate analysis was conducted for the high school and college sample scores on the Weight and Appearance subscale. A strong positive correlation

was found between the college Weight and Appearance scores and the Eating Attitudes Test (r (220) = .573, p < .001; 95% confidence interval .475 to .655), and a strong positive correlation was found between the high school Weight and Appearance scores and the EAT (r (146) = .601, p < .001; 95% confidence interval .485 to .695).

Hypothesis 3 was supported in that the RFES and its subscales correlated with the difference scores on the Body Size Drawings in expected directions. A low to moderate positive correlation was found between the RFES total score and the BSD difference scores (r (307) = .227, p < .001; 95% confidence interval .130 to .322). A weak to moderate negative correlation was found between the Health and Enjoyment subscale and difference scores on the BSD difference scores (r (307) = -.212, p < .001; 95% confidence interval -.114 to -.306). Separate analysis was conducted for the high school and college sample scores on the Weight and Appearance subscale. A strong positive correlation was found between the college Weight and Appearance scores and the BSD difference scores (r (215) = .429, p < .001; 95% confidence interval .315 to .531), and a strong positive correlation was found between the high school Weight and Appearance scores and the BSD difference scores (r (94) = .586, p < .001; 95% confidence interval .485 to .695).

Hypothesis 4 was supported in that the RFES and its subscales correlated in expected directions with the Body Dissatisfaction subscale. A low positive correlation was found between the RFES total score and the BD subscale (r (209) = .139, p < .05; 95% confidence interval .037 to .243). A moderate

negative correlation was found between the Health and Enjoyment subscale and the BD subscale (r (209) = -.307, p < .001; 95% confidence interval -.215 to -.395). The BD subscale was not administered to the college sample, however a strong positive correlation was found between the high school Weight and Appearance scores and the BD subscale (r (209) = .450, p < .001; 95% confidence interval.340 to .550).

Regression analysis was conducted such that the two RFES subscales were regressed on the three measures of eating disordered attitudes. Health and Enjoyment (beta = -.893, p < .001) and Weight and Appearance (beta = -.149, p < .001) were found to be significant predictors of scores on the Eating Attitudes Test accounting for 36% of the variance. Health and Enjoyment (beta = -.0036, p < .001) and Weight and Appearance (beta = -.0055, p < .001) were found to be significant predictors of scores on Body Size Drawings accounting for 28% of the variance. Health and Enjoyment (beta = -.267, p < .001) and Weight and Appearance (beta = .294, p < .001) were found to be significant predictors of scores on the Body Dissatisfaction subscale accounting for 35% of the variance.

A Body Mass Index (BMI) was calculated for each participant using the height and weight information collected. The participant's Body Mass Index was calculated by dividing the participant's weight in kilograms by the square of the participant's height in meters. As mentioned earlier, separate analysis was conducted for the high school and college BMI. A weak positive correlation was found between the high school BMI and the high school Weight and Appearance subscale (r (141) = .229, p < .01; 95 % confidence interval .060 to .394). No

correlation was found between the college BMI and the college Weight and Appearance subscale (r (200) = -.015, p < .84; 95% confidence interval -.157 to .121). Correlational analysis between the high school BMI and the Health and Enjoyment subscale yielded no correlation (r (141) = -.099, p < .25; 95 % confidence interval .-.093 to .241). Correlational analysis between the college BMI and the Health and Enjoyment subscale yielded no correlation (r (200) = .003, p < .96; 95% confidence interval -.155 to .191).

Test-Retest Reliability

Test-retest reliability was measured by calculating the Pearson product-moment correlations for the RFES total score and subscale total scores between the first and second administrations of the RFES. Hypothesis 5 was supported in that a strong positive correlation was found between the first and second administrations of the RFES for the Weight and Appearance subscale (r (94) = .840, p < .001), the Health and Enjoyment subscale (r (94) = .741, p < .001), and the RFES total scores (r (94) = .813, p < .001).

Internal Consistency

Internal consistency was measured using Cronbach's alpha for the individual factors and entire scale. Hypothesis 6 was supported in that the RFES subscales showed adequate intercorrelations within the individual factors. The Weight and Appearance subscale yielded strong item intercorrelations (alpha = .9159) and the Health and Enjoyment subscale yielded strong item intercorrelations as well (alpha = .8431). In addition, the entire scale yielded strong item intercorrelations (alpha = .8494).

CHAPTER IV

DISCUSSION

This study provides strong initial support for the use of the Reasons For Exercise Scale as a valid, stable, and reliable measure of different reasons for exercise as they may be related to healthy and unhealthy eating habits and body image. The analysis of the data collected supported all original hypothesis proposed at the beginning of this project. This study provides strong initial support for the RFES as a useful tool in studying different reasons for exercise as they are related to healthy and unhealthy eating habits and body image. In addition, this study suggests that the RFES is a measure that can be used for both high school and college students, as well as across several racial groups.

Exploratory factor analysis and item elimination reduced the original RFES from a 20-item measure to an 18-item, two-factor measure of reasons for exercise. One factor, labeled *Weight and Appearance*, consists of nine items that focus on reasons for exercise related to weight control or concern for physical appearance (e.g., I exercise to work off unwanted calories; I will look better in a bathing suit if I exercise.) Scores on this subscale indicate the degree to which one exercises to feel with physically more thin or attractive, or avoid weight gain or unattractiveness. The emergence of a factor concerning weight and appearance reasons for exercise is consistent with the theories relating exercise and eating disorders described earlier in this paper, such that weight and appearance motivations for exercise have been suggested to be related to greater eating disordered pathology.

The second factor found, labeled *Health and Enjoyment*, consists of nine items that focus on reasons for exercise related to fitness, health, mood management, socializing, and enjoyment (e.g., I really have fun while exercising; I want to be strong and healthy.) Scores on this subscale indicate the degree to which one exercises to be physically healthier, maintain a better mood, or enjoy the physical activity. The emergence of a factor concerning health and enjoyment reasons for exercise is also consistent with the theories relating exercise and eating disorders described earlier, such that health and enjoyment motivations for exercise have been suggested to be related to lower rates of eating disordered pathology. These two factors were not found to be significantly correlated indicating that these different reasons for exercise are separate from each other and operate independently of each other.

The results of the correlational analysis between the RFES subscales and the Eating Attitudes Test, Body Size Drawings, and the Body Dissatisfaction subscale provides strong support of the use of the RFES as a useful tool for examining the relationship between reasons for exercise and eating disordered pathology. The analysis indicated that weight and appearance reasons for exercise are strongly correlated to holding greater amounts of eating disordered attitudes, having greater amounts of body size dissatisfaction, and engaging in greater amounts of eating disordered behaviors. This suggests reasons for exercise that are related to weight and appearance control may encourage eating disordered pathology. Scores on the weight and appearance subscale were significantly higher for college students than high school students. This suggests

that college students are more motivated to exercise by weight and appearance reasons than high school students. In addition, this study suggests that college students endorse more eating disordered attitudes than high school students. Causal analysis was not able to be conducted from the data collected, therefore more needs to be understood about the relationship between appearance and weight reasons for exercise and eating disordered pathology. However, this suggests that weight and appearance reasons for exercise play a role in the development and maintenance of eating disorders, although the exact role is not clear. Although causal analysis could not be conducted in this study, regression analysis indicated that RFES subscales had good predictive validity for eating disordered attitudes and behaviors.

The correlational analysis also indicated that health and enjoyment reasons for exercise are correlated to endorsing lesser amounts of eating disordered attitudes, having less body size dissatisfaction, and engaging in lesser amounts of eating disordered behaviors. This suggests reasons for exercise related to health and enjoyment are related to having lower rates of eating disordered pathology. Although the exact relationship is not clear, it may be that exercising for health and enjoyment reasons may actually discourage eating disordered pathology.

Limitations and Future Directions

Although this study provides strong initial support for the Reasons For Exercise Scale as a valid and reliable measure of exercise reasons, there are several limitations to the study. The results of this study can only be generalized

to a specific population because of its limited sample. The sample consisted mostly of young White women, ages 13 to 26 years of age. This study suggests that female college students are more motivated to exercise for weight and appearance reasons than high school students. It would be interesting to examine this further, and study the differences in eating disorders prevalence between high school and college students. Although eating disorders are prevalent among young females in the 13 to 26 age group, it would be useful to also determine whether the RFES would be valid and reliable when used with a wider age range. In addition, it would be interesting to examine whether this scale would be valid and reliable for males as well.

Although the RFES measures reasons for exercise, it does not measure the frequency, duration, or type of exercise a person engages in. The frequency, duration, and type of exercise are other factors that would be useful to measure when studying the relationship between exercise and eating disorders. It would be useful for future studies to examine how these three things influence eating disordered pathology.

The EAT, BSD, and the BD subscale are only measures of eating attitudes and behaviors related to eating disorders pathology, but not actual measures of an eating disorder meeting DSM-IV criteria. Future studies should also determine the relationship between reasons for exercise and the occurrence of eating disorders meeting full diagnostic criteria, so that we understand how exercise motivations contribute or discourage to not only eating disordered attitudes, but the development of an actual eating disorder.

Finally, a causal relationship cannot be determined from the results of this study. Only correlational and regression analysis were conducted in this study which does not describe the nature of the relationship between reasons for exercise and the development and maintenance of eating disordered pathology. It would be useful for future studies to conduct longitudinal studies to determine the causal effects of reasons for exercise on the development and maintenance of eating disorders. In addition, this would also determine if health and enjoyment reason for exercise act as a deterrent to the development of eating disorders. Future studies could help researchers understand how exercise motivated by health and enjoyment may discourage the development and maintenance of eating disorders.

Table 1. The Reasons For Exercise Scale (RFES), Means and Standard Deviations for Each Item, and Factor Loadings Greater Than .40 (N = 370)

	Factor loading		M	SD
	1	2		
Weight and Appearance				
I'm worried I'll gain weight if I stop exercising. (1)	.791		4.13	1.99
I exercise because I want to look good. (4)	.755		5.24	1.65
Exercise helps me control my weight. (6)	.800		4.55	1.95
It makes my clothes fit better. (7)	.795		4.14	2.10
I feel like I need to exercise after I eat unhealthy foods. (9)	.769		4.05	2.08
I will look better in a bathing suit if I exercise. (11)	.722		4.63	1.96
I exercise to work off unwanted calories. (12)	.812		4.22	2.13
I feel bad about myself if I don't exercise. (14)	.674		3.82	2.10
I exercise because I want to be thin. (20)	.811		3.89	2.22
Health and Enjoyment				
I exercise to improve my physical stamina. (2)		.668	5.48	1.50
I exercise to get rid of energy. (3)		.405	3.08	1.92
I want to learn new skill. (5)		.657	4.55	1.75
Exercise releases tension. (8)		.653	5.46	1.66
I can meet other people when I exercise. (10)		.618	3.85	1.93
I like the challenge. (13)		.843	5.03	1.85
I really have fun when I am exercising. (15)		.801	4.97	1.81
I want to be strong and healthy. (16)		.685	6.18	1.26
I exercise to gain a competitive edge in sports. (17)		.696	4.24	2.23

Note: Numbers in parentheses indicate the sequence of items on the 20-item scale. Factor 1 = Weight and Appearance; Factor 2 = Health and Enjoyment.

Table 2. Means, Standard Deviations, and Minimum and Maximum Values

Measure	M	SD	Min-Max
RFES - Total	87.90	19.65	26 - 132
RFES - W&A College	40.273	13.486	9 - 63
RFES - W&A High School	36.255	14.703	9 - 63
RFES - Health and Enjoyment	42.86	10.72	9 - 63
Eating Attitudes Test	7.56	9.15	0 - 55
Body Size Drawings	1.37	1.53	-3.0 - 8.5
Body Dissatisfaction Subscale	9.45	7.74	0 - 27
Body Mass Index - High School	21.28	3.64	15.20 - 38.49
Body Mass Index - College	22.37	3.13	17.18 - 35.74

Note. Scores for the Body Size Drawings reflect the difference scores between actual and ideal/desired body size.

Table 3. Pearson Product-Moment Correlation Matrix between the RFES, EAT, BSD, BD Subscale, and BMI

Measure	1	2	3	4	5	6	7
1. RFES - Total (N = 367)	--						
2. RFES - W&A College (N = 220)	.810***	--					
3. RFES - W&A High School (N = 149)	.807***	--	--				
4. RFES - H&E (N = 367)	.640***	.145*	-.046	--			
5. EAT (N = 368)	.365***	.573***	.601***	-.136*	--		
6. BSD (N = 310)	.227***	.429***	.586***	-.212***	.418***	--	
7. BD Subscale (N = 209)	.139*	.450***	--	-.307***	.473***	.671***	--
8. BMI High School (N = 141)	.145	--	-.227**	-.099	.128	.436***	--
9. BMI College (N = 200)	.000	-.018	--	.003	-.097	.342***	.284***

Note: RFES = Reasons For Exercise Scale; W&A = Weight and Appearance; H&E = Health and Enjoyment; EAT = Eating Attitudes Test; BSD = Body Size Drawings; BD Subscale = Body Dissatisfaction Subscale of the Eating Disorders Inventory; BMI = Body Mass Index

*p < .05 **p < .01 ***p < .001

Figure 1. Age Distribution of Sample

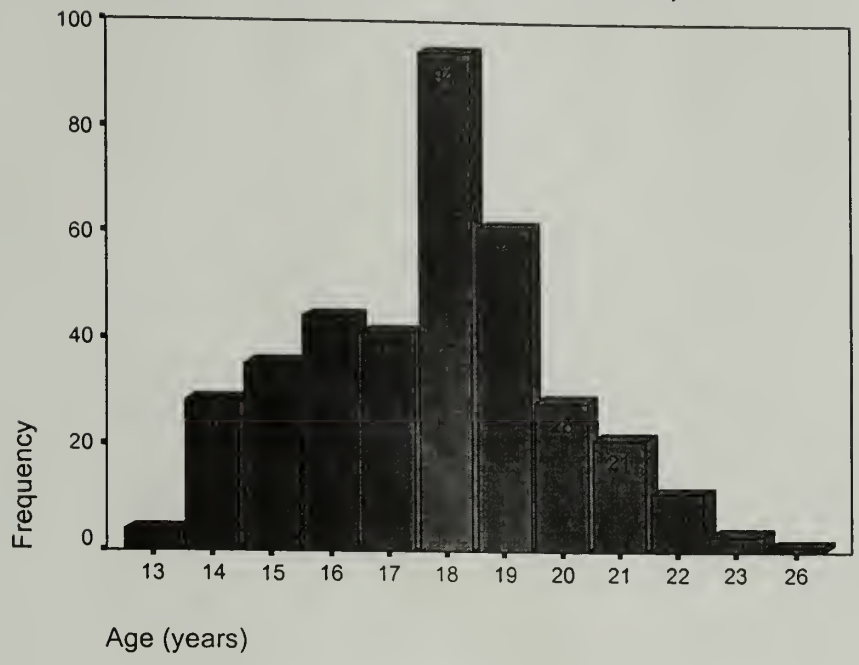


Figure 2. Self-Reported Racial Identification

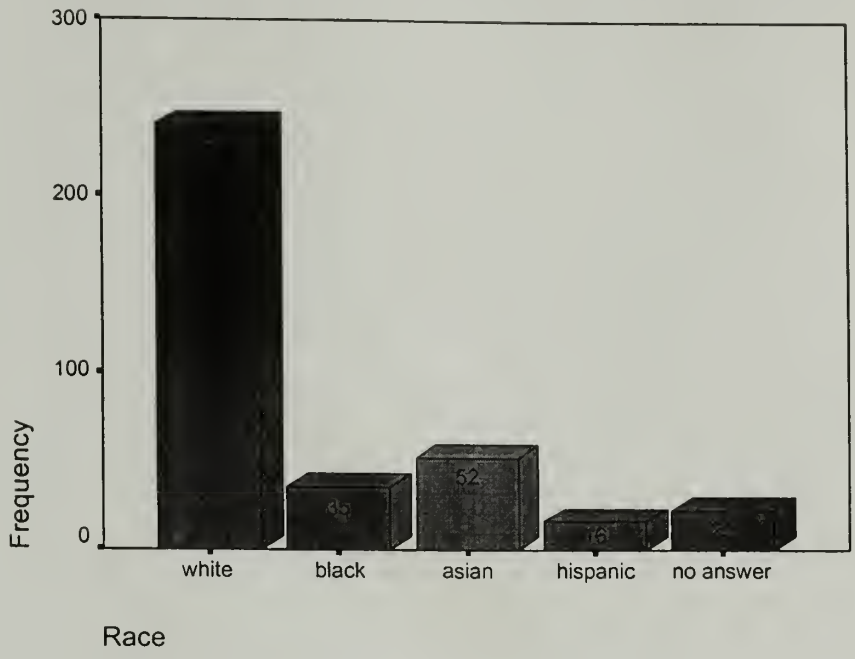
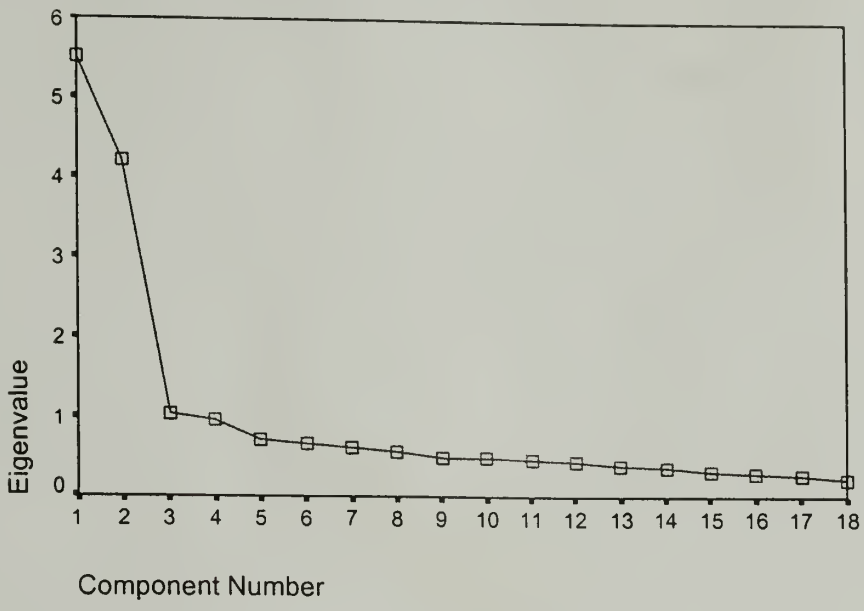


Figure 3. Scree Plot for RFES



Note. Eigenvalues after elimination if items number 18 and 19.

APPENDIX

QUESTIONNAIRES

(in pocket)

REFERENCES

American Psychological Association. (1994). Diagnostic and statistical manual of mental disorders (4th ed.). Washington, DC: Author.

Berger,B.G. (1984). Running towards psychological well-being: Special considerations for the female client. In M.L. Sachs and G. Buffone (Eds). Running as therapy: An Integrated Approach. Lincoln: University of Nebraska Press.

Brehm, B.J., & Steffen, J.J. (1998). Relation between obligatory exercise and eating disorders. American Journal of Health Behavior, 22(2), 108-119.

Cash, T.F., Novy, P.L., & Grant, J.R. (1994). Why do women exercise? Factor analysis and further validation of the Reasons for Exercise Inventory. Perceptual and Motor Skills, 78, 539-544.

Davis, C. (1990). Body image and weight preoccupation: A comparison between exercising and non-exercising women. Appetite, 15, 12-21.

Davis, C. & Cowles, M. (1989). A comparison of weight and diet concerns and personality factors among female athletes and non-athletes. Journal of Psychosomatic Research, 33, 527-536.

Davis, C., Kennedy, H., Ravelski, E., & Dionne, M. (1994). The role of physical activity in the development and maintenance of eating disorders. Psychological Medicine, 24, 957-967.

Edwards-Hewitt, T., & Gray, J.J. (1993). The prevalence of disordered eating attitudes and behaviors in Black-American and White-American college women: Ethnic, regional, class, and media differences. European Eating Disorders Review, 1, 41-54.

Fallon, A.E., & Rozin, P. (1985). Sex differences in perceptions of body shape. Jounral of Abnormal Psychology, 94, 102-105.

Furman, A., Titman, P., & Sleeman, E. (1994). Perception of female body shapes as a function of exercise. Journal of Social Behavior and Personality, 9, 335-352.

Garner, D.M., Olmstead, M.P., Bohr, Y., & Garfinkel, P.E. (1982). The Eating Attitudes Test: Psychometric features and clinical correlates. Psychological Medicine, 12, 871-878.

Garner, D.M., Olmstead,M.A., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia and bulimia. Interanational Journal of Eating Disorders, 2, 15-35.

Hart, K.S., & Ollendick, T.H. (1985). Prevalence of bulimia in working and university women. Psychiatry, 142, 851-854.

Johnson, C., Powers, P.S., & Dick, R. (1999). Athletes and eating disorders: The national collegiate athletic association study. International Journal of Eating Disorders, 26, 179-188.

Jones, D.J., Fox, M.M., Babigian, H.M., & Hutton, H.E. (1980). Epidemiology of anorexia nervosa in Monroe County, NY. Psychosomatic Medicine, 42, 551-558.

Kaltiala-Heino, R., Rissanen, A., Rimpelae, M., & Rantanen, P. (1999). Bulimia and bulimic behavior in middle adolescence: More common than though? Acta Psychiatrica Scandinavica, 100, 33-39.

Klock, S., & DeSouza, M. (1995). Eating disorder characteristic and psychiatric symptomatology of eumenorrheic and amenorrheic runner. International Journal of Eating Disorders, 17, 161-166. Lucas, A.R., Beard, M.C.,

O'Fallon, M.W., & Kurland, L.T. (1991). 50-year trends in the incidence of anorexia nervosa in Rochester, Minn.: A population-based study. American Journal of Psychiatry, 148, 917-922.

MacDonald, K., & Thompson, K.J., (1990). Eating disturbance, body image dissatisfaction, and reasons for exercising: Gender differences and correlational findings. International Journal of Eating Disorders, 11(3), 289-292.

Markland, D., & Hardy, L. (1993). The Exercise Motivations Inventory: Preliminary development and validity of a measure of individuals' reasons for participating in regular physical exercise. Personality and Individual Differences, 15, 289-296.

Ogden, J., Veale, D., & Summers, Z. (1997). The development and validation of the Exercise Dependence Questionnaire. Addiction Research, 5, 343-356.

Orwin, A. (1973). The running treatment: A preliminary communication on a new use for an old therapy in the agoraphobic syndrome. British Journal of Psychiatry, 122, 175-179.

Pasman, L. & Thompson, J. (1988). Body image and eating disturbance in obligatory runners, obligatory weightlifters and sedentary individuals. International journal of Eating Disorders, 7, 759-769.

Pope, H.G., Hudson, J.I., Yurgelun-Todd, D., & Hudson, M.S. (1984). Prevalence of anorexia nervosa and bulimia in three student populations. International Journal of Eating Disorders, 3, 45-51.

Siberstein, R., Stiegal-Moore, R.H., Timko, C., & Rodin, J. (1988). Behavioral and psychological implications of body dissatisfaction: Do men and women differ? Sex Roles, 19, 219-232.

Smith, B.L., Handley, P., & Eldrige, D. (1998). Sex differences in exercise motivation and body-image satisfaction among college students. Perceptual and Motor Skills, 86, 723-732.

Stephen, J.J., & Brehm, B.J. (1999). The dimension of obligatory exercise. Eating Disorders, 7, 219-226.

Stoujesdky, D., & Jevne, R. (1993). Eating disorders among high performance athletes. Journal of Youth and Adolescence, 22, 271-282.

Sungot-Borgen, J. (1994). Risk and trigger factors for the development of eating disorders in female elite athletes. Medicine and Science in Sport and Exercise, 4, 414-419.

Sutker, P.B. & Adams, H.E. (1993). Comprehensive Handbook of Pathology . (2nd ed). New York, NY: Plenum Press.

Taub, D., & Blinde, E. (1994). Disordered eating and weight control among adolescent female athletes and performance squad members. Journal of Adolescent Research, 9, 483-497.

Veale, D., LeFevre, K., Pantelis, C., DeSouza, V., & Mann, A. (1992). Aerobic exercise in the adjunctive treatment of depression: a randomized controlled trial. Journal of the Royal Society of Medicine, 85, 541-544.

Weiss, M., & Barber, H. (1995). Socialization influences of collegiate female athlete: A tale of two decades. Sex Roles, 33, 129-140.

Willi, J., & Grossman, S. (1983). Epidemiology of anorexia nervosa in a defined region of Switzerland. American Journal of Psychiatry,140(5), 564-567.

Yates, A. (1991). Compulsive exercise and the eating disorders: toward an integrated theory of activity. New York: Brunner/Mazel.

The Reasons For Exercise Scale

There are many reasons why people exercise. Please indicate the extent to which you exercise for each of the following reasons. Circle one of the numbers from 1 (do not at all agree) to 7 (strongly agree).

	do not all agree						strongly agree
1. I'm worried I'll gain weight if I stop exercising.	1	2	3	4	5	6	7
2. I exercise to improve my physical stamina.	1	2	3	4	5	6	7
3. I exercise to get rid of energy.	1	2	3	4	5	6	7
4. I exercise because I want to look good.	1	2	3	4	5	6	7
5. I want to learn new skills.	1	2	3	4	5	6	7
6. Exercise helps me control my weight.	1	2	3	4	5	6	7
7. Exercise makes my clothes fit better.	1	2	3	4	5	6	7
8. Exercise releases tension.	1	2	3	4	5	6	7
9. I feel like I need to exercise after I eat unhealthy foods.	1	2	3	4	5	6	7
10. I can meet other people when I exercise.	1	2	3	4	5	6	7
11. I will look better in a bathing suit if I exercise.	1	2	3	4	5	6	7
12. I exercise to work off unwanted calories.	1	2	3	4	5	6	7
13. I like the challenge.	1	2	3	4	5	6	7
14. I feel bad about myself if I don't exercise.	1	2	3	4	5	6	7
15. I really have fun when I am exercising.	1	2	3	4	5	6	7
16. I want to be strong and healthy.	1	2	3	4	5	6	7
17. I exercise to gain a competitive edge in sports.	1	2	3	4	5	6	7
18. I feel pressure from my family and friends to exercise.	1	2	3	4	5	6	7
19. I exercise for health reasons (e.g. reduce cholesterol).	1	2	3	4	5	6	7
20. I exercise because I want to be thin.	1	2	3	4	5	6	7

EATING ATTITUDES TEST

INSTRUCTIONS:

Please place an (X) under the column which applies best to each of the numbered statements. All of the results will be strictly confidential. Most of the questions directly relate to food or eating, although other types of questions have been included. Please answer each question carefully. Thank you.

Always	Usually	Often	Sometimes	Rarely	Never	
____	____	____	____	____	____	1. Am terrified about being overweight.
____	____	____	____	____	____	2. Avoid eating when hungry.
____	____	____	____	____	____	3. Find myself preoccupied with food.
____	____	____	____	____	____	4. Have gone on eating binges where I feel that I may not be able to stop.
____	____	____	____	____	____	5. Cut my food into small pieces.
____	____	____	____	____	____	6. Am aware of the calorie content of the foods I eat.
____	____	____	____	____	____	7. Particularly avoid foods with a high carbohydrate content (e.g. bread, rice, potatoes, etc.).
____	____	____	____	____	____	8. Feel that others would prefer it if I ate more.
____	____	____	____	____	____	9. Vomit after I have eaten.
____	____	____	____	____	____	10. Feel guilty after I have eaten.
____	____	____	____	____	____	11. Am preoccupied with a desire to be thinner.
____	____	____	____	____	____	12. Think about burning up calories when I exercise.
____	____	____	____	____	____	13. Other people think that I am too thin.
____	____	____	____	____	____	14. Am preoccupied with the thought of having fat on my body.
____	____	____	____	____	____	15. Take longer than others to eat my meals.
____	____	____	____	____	____	16. Avoid eating foods with sugar in them.
____	____	____	____	____	____	17. Eat diet foods.
____	____	____	____	____	____	18. Feel that food controls my life.
____	____	____	____	____	____	19. Display self-control around food.
____	____	____	____	____	____	20. Feel that others pressure me to eat.
____	____	____	____	____	____	21. Give too much time and thought to food.
____	____	____	____	____	____	22. Feel uncomfortable after eating sweets.
____	____	____	____	____	____	23. Engage in dieting behavior.
____	____	____	____	____	____	24. Like my stomach to be empty.
____	____	____	____	____	____	25. Enjoy trying new rich foods.
____	____	____	____	____	____	26. Have the impulse to vomit after meals.

EATING DISORDERS INVENTORY: BODY DISSATISFACTION SUBSCALE

INSTRUCTIONS:

Please place an (X) under the column which best applies to each of the numbered statements.

Always	Usually	Often	Sometimes	Rarely	Never	
____	____	____	____	____	____	1. I think that my stomach is too big.
____	____	____	____	____	____	2. I think that my thighs are too large.
____	____	____	____	____	____	3. I think that my stomach is just the right
____	____	____	____	____	____	4. I feel satisfied with the shape of my body.
____	____	____	____	____	____	5. I like the shape of my buttocks.
____	____	____	____	____	____	6. I think my hips are too big.
____	____	____	____	____	____	7. I think my thighs are just the right size.
____	____	____	____	____	____	8. I think my buttocks are too large.
____	____	____	____	____	____	9. I think that my hips are just the right size.

BODY SIZE DRAWINGS

For items 1 and 2, refer to the figures below. Note the thinnest figure is 1 and the heaviest figure is 12. In answering, YOU CAN SELECT INTERMEDIATE VALUES. Thus, a figure somewhere between figure 7 and figure 8, could be represented as 7.4 and so on.

_____ 1. Choose the figure (any number from 1 to 12) that best represents your current appearance.

_____ 2. Indicate the figure (1 – 12) that you would like to look like.

_____ 3. Physical attractiveness is either the first or second most important feature that I look for in a potential mate. 1) True 2) False